Solutions

Marking: **M1** a correct method, **A1** the correct answer, **B1** an independent mark.

Each answer shows the steps, then the **result**.

2.1

an invention is a new idea, product or process; an innovation is an invention that has been brought to market and is used

2.2

(a) patent

(b) trademark

2.3

$12\,000 \div (60 - 20) =$ **300** lamps

2.4

market pull: users' needs drive the new product; e.g. people wanted to carry music, so portable players were made; technology push: a new technology leads to products looking for a use; e.g. lasers, later used in barcode scanners

2.5

early adopters are respected opinion leaders, about 13.5 % of buyers; others watch them and follow their choices; if they adopt, the early majority (34 %) often follows, so sales grow quickly

3.1

(a) any two, outlined: affordable for families with low incomes; simple, so it can be repaired with local skills and tools; needs no fuel or electricity; made from tough local or easy-to-get materials, e.g. polyethylene

(b) advantage: protects the invention for about 20 years, so the team can earn money / license it to pay for development; disadvantage: applying is costly and makes the design public; other makers cannot freely make cheap copies, so fewer people may get it

3.2

(a) A: introduction; C: maturity

(b) any two, explained: a new model with new features, e.g. a screen, to win back buyers; new colours or a lower price to reach new buyers; new markets, e.g. other countries or business users

(c) incremental innovation makes small improvements to an existing product; disruptive innovation starts with overlooked low-end or new users and then moves into the mainstream, replacing existing products; e.g. steel mini-mills made cheap reinforcing bars, then moved into higher-value steel